

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A computer-implemented method for asynchronous receipt and processing of electronic ink annotation of a document, comprising:

- generating a first analysis context object, the first analysis context object providing a translation layer for a document model of a current state of a relationship of elements in the document and comprising a tree data structure for storing document elements in a hierarchical relationship;

- starting a first thread, wherein the first thread updates the first analysis context object based upon a user interaction with the document, the user interaction including electronic ink annotation;

- upon an event requiring analysis of new data in the document:

- suspending execution of the first thread so as to prevent changes to the first analysis context object;

- starting a second thread, wherein the second thread generates a second analysis context object corresponding to a portion of the first analysis context object, wherein the portion corresponds to a designated region of the document;

- upon completion of generation of the second analysis context object:

- suspending execution of the second thread;

- restarting the first thread;

- performing a first analysis of the second analysis context object to generate a third analysis context object from the second analysis context object, wherein the third analysis context object is generated by parsing the new data and modifying the second analysis context object based on the new data and further includes classification information for the new data;

- upon completion of the first analysis:

- suspending execution of the first thread so as to prevent any changes to the first ~~document~~ analysis context object;

- starting a third thread, wherein the third thread reconciles the third analysis context object with the first analysis context object to generate first reconciled analysis results;

upon completion of the reconciliation of the first analysis context object and the third analysis context object:

updating the first analysis context object with the first reconciled analysis results;

suspending execution of the third thread; and

restarting the first thread.

2. (Previously Presented) The method according to claim 1, wherein the first analysis context object includes a member selected from the group of: a paragraph node, a line node, a word node, and a drawing node.

3. (Previously Presented) The method according to claim 1, wherein the first analysis context object includes a member selected from the group of: a group node, a paragraph node, a line node, an ink word node, an electronic drawing node, an ink drawing node, a list node, a list item node, an electronic bullet node, an ink bullet node, an electronic text word node, an image node, a table node, a row node, and a cell node.

4. (Previously Presented) The method according to claim 3, wherein the second analysis context object is selected from the group of: an unclassified ink node, a group node, a paragraph node, a line node, an ink word node, an ink drawing node, a list node, a list item node, an ink bullet node, a table node, a row node, and a cell node.

5. (Canceled).

6. (Previously Presented) The method according to claim 1, wherein the portion includes at least one of electronic text, an image, a table, a list, a graph, a spreadsheet, a chart, or a drawing.

7-8. (Canceled).

9. (Previously Presented) The method according to claim 1, wherein the new data is

an electronic ink annotation, the annotation includes at least one unclassified ink node.

10. (Previously Presented) The method according to claim 9, further comprising:
rendering the portion and the electronic ink annotation, wherein the electronic ink annotation is located at a first position with respect to the portion;
changing data associated with the portion such that a location associated with the first context node changes to a second position; and
rendering the electronic ink annotation and the portion with the changed data, wherein the electronic ink annotation is rendered at a third position with respect to the first portion at least in part based on the second position of the first context node.
11. (Canceled).
12. (Previously Presented) The method according to claim 1, wherein the first context node and the second context node share at least one common parent node.
13. (Previously Presented) The method according to claim 9, wherein data associated with the first context node and the second context node enable the electronic document to be rendered such that the electronic ink annotation contains the portion of the document.
14. (Previously Presented) The method according to claim 9, wherein data associated with the first context node and the second context node enable the electronic document to be rendered such that the electronic ink annotation underlines the portion of the document.
15. (Previously Presented) The method according to claim 9, wherein data associated with the first context node and the second context node enable the electronic document to be rendered such that the electronic ink annotation strikes out the portion of the document.
16. (Previously Presented) The method according to claim 9, wherein data associated with the first context node and the second context node enable the electronic document to be rendered such that a first region of the electronic ink annotation points between a second

region of the electronic ink annotation and the portion of the base document.

17. (Previously Presented) A computer-readable storage medium including computer-executable instructions, the instructions when executed performing the method of claim 1.

18-33. (Canceled).

34. (Currently Amended) A system for asynchronous receipt and processing of electronic ink annotation of a document, comprising:

an input for receiving electronic ink input data in the document, wherein the document is an electronic document; and

a processor programmed and adapted to:

generate a first analysis context object, the first analysis context object providing a translation layer for a document model of a current state of a relationship of elements in the document and comprising a tree data structure for storing document elements in a hierarchical relationship;

start a first thread, wherein the first thread updates the first analysis context object based upon a user interaction with the document, the user interaction including electronic ink annotation;

upon an event requiring analysis of new data in the document:

suspend the execution of the first thread so as to prevent changes to the first analysis context object;

start a second thread, wherein the second thread generates a second analysis context object corresponding to a portion of the first analysis context object, wherein the portion corresponds to a designated region of the document;

upon completion of generation of the second analysis context object:

suspend the execution of the second thread;

restart the first thread;

perform a first analysis of the second analysis context object to generate a third analysis context object from the second analysis context object, wherein the third analysis context object is generated by parsing the new data and modifying the second

analysis context object based on the new data;
 upon completion of the first analysis:
 suspend execution of the first thread so as to prevent any changes to
the first ~~document~~ analysis context object;
 start a third thread, wherein the third thread reconciles the third
analysis context object with the first analysis context object to generate first reconciled
analysis results;
 upon completion of the reconciliation of the first analysis context object and
the third analysis context object:
 update the first analysis context object with the first reconciled analysis
results; and
 suspend the execution of the third thread; and
 restart the first thread.

35. (Previously Presented) The system according to claim 34, wherein the first analysis context object includes a member selected from the group of: a paragraph node, a line node, a word node, and a drawing node.

36. (Previously Presented) The system according to claim 34, wherein the first analysis context object includes a member selected from the group of: a group node, a paragraph node, a line node, an ink word node, an electronic drawing node, an ink drawing node, a list node, a list item node, an electronic bullet node, an ink bullet node, an electronic text word node, an image node, a table node, a row node, and a cell node.

37. (Previously Presented) The system according to claim 36, wherein the second analysis context object is selected from the group of: an unclassified ink node, a group node, a paragraph node, a line node, an ink word node, an ink drawing node, a list node, a list item node, an ink bullet node, a table node, a row node, and a cell node.

38. (Canceled)

39. (Previously Presented) The system according to claim 34, wherein the portion includes at least one of electronic text, an image, a table, a list, a graph, a spreadsheet, a chart, or a drawing.

40-41. (Canceled).

42. (Previously Presented) The system according to claim 34, wherein the new data includes an electronic ink annotation and prior to parsing the electronic ink annotation, the annotation includes at least one unclassified ink node.

43. (Previously Presented) The system according to claim 42, wherein the processor is further programmed and adapted to:

render the portion and the electronic ink annotation, wherein the annotation is located at a first position with respect to the first portion,

receive input indicating a change in data associated with the portion such that a location associated with the first analysis context object changes to a second position, and

render the electronic ink annotation and the portion with the changed data, wherein the annotation is rendered at a third position with respect to the portion at least in part based on the second position of the first analysis context object.

44. (Canceled).

45. (Previously Presented) The system according to claim 34, wherein the first analysis context object and the second analysis context object share at least one common parent node.

46. (Previously Presented) The system according to claim 42, wherein data associated with the first analysis context object and the second analysis context object enable the electronic document to be rendered such that the electronic ink annotation contains the portion of the document.

47. (Previously Presented) The system according to claim 42, wherein data associated

with the first analysis context object and the second analysis context object enable the electronic document to be rendered such that the electronic ink annotation underlines the portion of the document.

48. (Previously Presented) The system according to claim 42, wherein data associated with the first analysis context object and the second analysis context object enable the electronic document to be rendered such that the electronic ink annotation strikes out the portion of the document.

49. (Previously Presented) The system according to claim 42, wherein data associated with the first analysis context object and the second analysis context object enable the electronic document to be rendered such that a first region of the electronic ink annotation points between a second region of the electronic ink annotation and the portion of the document.

50-65. (Canceled).

66. (Previously Presented) The method according to claim 9, wherein the portion corresponds to one or more words of typewritten text in the electronic document, and wherein the annotation is an electronic ink annotation of the one or more words of typewritten text.

67. (Previously Presented) The system according to claim 42, wherein the portion corresponds to one or more words of typewritten text in the electronic document, and wherein the annotation is an electronic ink annotation of the one or more words of typewritten text.

68. (Previously Presented) The method according to claim 9, wherein the portion corresponds to an electronic ink drawing in the electronic document, and wherein the annotation is an electronic ink annotation of the electronic ink drawing.

69. (Previously Presented) The system according to claim 42, wherein the portion corresponds to an electronic ink drawing in the electronic document, and wherein the annotation is an electronic ink annotation of the electronic ink drawing.

70. (Previously Presented) The method according to claim 1, further comprising:
after suspending execution of the first thread starting a caching thread for receiving changes to the document based upon future user interaction;
after suspending execution of the second thread, suspending execution of the caching thread;
upon completion of the first analysis and after suspending execution of the first thread, restarting the caching thread; and
after suspending execution of the third thread, suspending the execution of the caching thread.